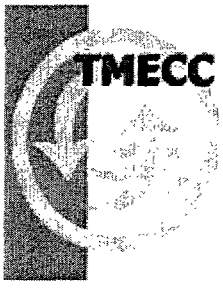
The Composting Council Research and Education Foundation



The US Composting Council

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TMECC · Test Methods for the Examination of Composting and Compost
CAP · Compost Analysis Proficiency
STA · Seal of Testing Assurance

The TMECC Project

TMECC provides detailed protocols for the composting industry to verify the physical, chemical, and biological condition of composting feedstocks, material in process and compost products at the point of sale. Material testing is needed to verify product safety and market claims. TMECC provides protocols to sample, monitor, and analyze materials at all stages of the composting process, i.e., prior to, during and after composting to help maintain process control, verify product attributes, assure worker safety, and to avoid degradation of the environment in and around the composting facility.

Standardized methods for testing and evaluating compost quality are needed by compost producers, state regulatory and permitting agencies, compost product marketing specialists, state and commercial testing laboratories, and agriculturalists, horticulturalists, landscapers, and other consumer sectors. Compost and compost blends are subject to extensive interstate transit and use on public and private lands. Compost is produced from a variety of feedstocks and thus provides for beneficial use of a variety of by-products:

- *Food Processing Residuals*—compostable material remaining after fruit, vegetables, grains, nuts, and meat are processed for consumption.
- *Manure and Agricultural By-Products*—originate at racetracks and feed lots, on the farm, and in greenhouses. Farms and greenhouses can typically recycle compostable residuals easily at the site of generation and are valued, but huge quantities of manure generated at racetracks, feedlots, and swine and poultry confinement facilities can pose a severe recycle/disposal problem.
- *Forestry and Forest Product Residuals*—includes bark and sawdust, and fiber fines residue and biosolids generated by the papermaking process. Bark and sawdust can be used in the composting industry as a carbon source with other feedstock material or as a bulking material to increase porosity of the feedstock mix.
- *Biosolids, or Sewage Sludge*—the solid material generated by the biological treatment of sewage at a wastewater treatment plant. In addition to being composted, sewage sludge can be recycled for beneficial use by direct application to land as a fertilizer.
- *Leaves, Brush and Yard Trimmings (Yard Waste)*—typically consists of leaves, brush, grass clippings, plant trimmings, and plant remains. Historically this material has been collected with municipal solid waste and incinerated or landfilled. Many communities now separately collect this "green waste" to be recycled for beneficial use by directing it to a mulching or composting facility.
- *Source Separated Organic Waste (SSOW)*—consists of the compostable and composting compatible fraction of municipal solid waste, accumulated and presorted by the generator, and collected separately from household hazardous material and sometimes non-compostable material. The compostable and composting compatible fraction can be directed to a central composting facility. For example, a generator source separated organic waste compostables collection program could include material like leaves, brush and yard trimmings, food scraps, wet and soiled paper,

diapers and sanitary products, pet waste, and dry paper packaging that is not recycled because of weak or nonexistent markets. Source separated organic waste includes residential, institutional and commercial sources, and can include the domestic portion of the industrial solid waste stream.

Use of standard methods and protocols for sampling, analysis, reporting, and interpretation of test results will promote production and marketing of quality composts that meet a core set of analytical standards. The methods and protocols in the TMECC form the basis for the U.S. Composting Council's grant from the US Environmental Protection Agency to develop a Seal of Testing Assurance (STA) for the commercial composting industry in the United States. Also, the Compost Analysis Proficiency Testing program (CAP) was initiated through collaboration with managers of NAPT to provide the Compost Laboratory Analysis Industry with an inter-laboratory QC program, to develop reference materials, and to measure the performance and reliability of TMECC analytical methods. Representatives of the composting industry in Canada, the European Union, and Japan have expressed support for development of these standards and have indicated their interest in adopting them once the TMECC is published and released in the United States.

Test Methods for the Examination of Composting and Compost:

TMECC is a laboratory manual modeled after American Society for Testing and Materials (ASTM). TMECC provides benchmark methods for compost analysis to enable comparison of analytical results. Each parameter is presented in its own section and generally includes more than one protocol or test method. The manual contains more parameters than might be of concern or interest for a particular situation.

- Some compost parameters are regulated for the protection of public health, safety, and the environment, while others are product performance attributes that are important for managing specific uses of the product. Other test parameters and their methods are of academic interest for research use.
- Detailed instruction is presented for sample collection, preparation, analysis and reporting to address all phases of composting, including feedstock and composting process evaluation, and final compost product characterization.
- Sections are grouped into chapters that cover sampling and sample preparation (02); physical properties (03); inorganic chemical properties (04); organic and biological properties (05); synthetic organic compounds (06); and pathogens (07).
- Each section includes a brief description of the parameter's function in the composting process, for safety of the product, or in product performance.

List of Sources

Compost sampling and testing protocols included in TMECC were either provided by individual contributors or adapted for compost analysis from methods in the following reference sources:

- Analytic procedures used in US EPA Report SW-846, Test Methods for Evaluating Solid Waste, 3rd Edition, November 1990, as revised.
- Association of Official Analytical Chemists (AOAC) Official Methods of Analysis, 1990, 15th edition.
- Methods of Soil Analysis, Parts I, II and III. Soil Science Society of America. 1996
- North Central Regional (NCR) Publication No. 221 (Revised). Recommended Chemical Soil Test Procedures for the North Central Region Bulletin No. 499 (Revised) October 1988 "Recommended Test Procedures for Greenhouse Growth Media".
- Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.
- The American Society for Testing and Materials (ASTM) Standard Test Methods, 1988.

Audience: Compost producers; regulators; marketing specialists; federal, state and commercial analytical laboratories; and interested consumers.

Email: Philip Leege, Pat Millner, USDA/ARS, or Maurice Watson, Ohio State